SOUTH AUSTRALIAN SOCIETY of MODEL and EXPERIMENTAL ENGINEERS INC.

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Just when you thought it was safe to go back to the water! Michael Offler's alligator patrolling the boat pond.

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EDITORIAL

Communication

RTBM

Over lunch with a friend recently, the conversation turned to aviation. He made some comments that really resonated. I'll let him tell the story.

"Aviation is a strange world. Before you can get anywhere, you have to learn a whole new language.

It is full of acronyms. GFPT (general flying progress test), LSAT (lowest safe altitude), VFR (visual flight rules), IMC (instrument meteorological conditions)…….. The list is endless.

But one acronym has stayed with me over the years. RTBM.

When learning to fly, I would leave notes with questions for the CFI (Chief Flying Instructor). This was well before emails. He always replied politely and informatively, but often had this acronym at the bottom of his response.

This puzzled me for a while and was a source of much amusement for other student pilots.

I finally worked it out: READ THE BLOODY MANUAL!"

This is good advice for model engineers. You just might not know as much as you think you know. If someone has gone to a lot of trouble to produce a manual, the least you can do is read it.

At SASMEE we have a lot of information posted on the website. Everything from how to drive a steam locomotive to how to cook chips.

So, if you are at the end of your tether, having tried everything you can think of and it still doesn't work…..RTBM

Good Advice!

PRESIDENT'S REPORT.

Ian Thomas

Greetings to all,

We have had a productive year, but unfortunately, we have lost a few people in the year; some long-time members of S.A.S.M.E.E. Our condolences go out to the families of those departed.

We now have started construction of our new workshop. It is hoped that it will be completed in a couple of months.

A lot of people have contributed to this club with hard work, with special mention to Max Shuard as a most valuable secretary. Acclamation forthcoming. Support from Bryan Homann as Vice-President was most helpful when I had not been here and also with behind the scenes work of the new workshop construction.

The committee was thanked for their efforts with a couple of members retiring from their role at this year's AGM, one being Trevor Morcom as Assistant-Treasurer. Acclamation forthcoming. Trevor will still be actively involved in the club.

I thank those people who I may have forgotten as some are re-standing for committee positions at this year's AGM. I look forward to a prosperous 2025.

Once again, on behalf of the committee, I give my thanks for serving you for the year.

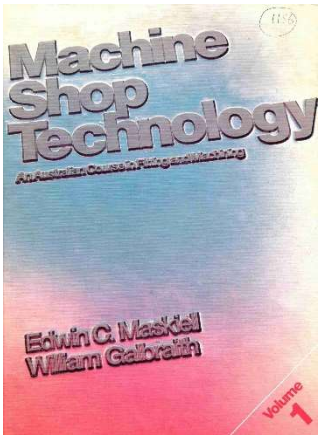
Ian Thomas, President 2023/2024.

IN THE LIBRARY

Max Shuard

The library is open from 7:00 to 7:45 on General Meeting nights. Also, I generally attend the public run days and Wednesday working bees, so if you are looking for something, please just ask.

Book of the Month



Machine Shop Technology. Edwin Maskiel and William Galbraith.

This is a course in fitting and machining, particularly suited to Australian conditions. This book covers pretty well all aspects of metal work. Starting with Measuring, hand tools, job planning and materials it gives a good grounding on where to start.

It then goes onto more sophisticated operations. The section on lathe use is particularly extensive. There are good details on setting and testing the trueness of centres, taper turning and finally screw cutting.

The section on shaping, slotting and broaching is perhaps beyond most home workshops. But technical drawing, welding, soldering and brazing are also useful.

The book finishes with chapters on maintenance fitting and heat treating.

Below is a page illustrating the clarity and detail contained in the book.

A very useful reference, particularly for those who are starting in the hobby. Highly recommended.

the base is 35.0 mm and allowance must be made for this height when calculating the stack of gauge blocks required for a dimension.

Fig. 2.59 *Holder base* MITUTOYO

Graduating

Two trammel points are used in the holder with the required dimension gauge block stack clamped between the trammels. One point serves as a reference point while the other is used as a measuring point or a scribing point.

The sine bar

The sine bar is a device commonly used for:

1. the accurate setting of workpieces for the machining of angles;
2. the measurement of angles;
3. the marking out of angles.

The sine bar consists of a rectangular section, hardened and ground steel bar to which is attached two equal diameter rollers. The size of the bar is designated by the distance the rollers are set apart. This distance should be within the tolerances as follows:

0.0025 mm for 100 mm sine bars
0.005 mm for 200 mm sine bars
0.008 mm for 300 mm sine bars

The upper working surface of the bar should be parallel to a line through the roller centres to within 0.002 mm.

The sine bar is used together with a surface plate and a set of gauge blocks and is set at a given angle by using a stack of gauge blocks placed under the rollers as shown in Figure 2.60.

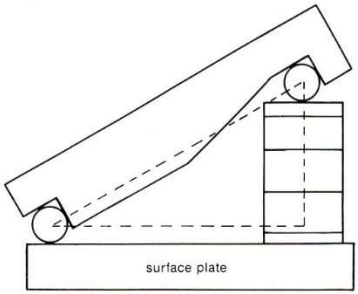


Fig. 2.60 *The sine bar*

Principle of the sine bar

The distance between the rollers becomes the hypotenuse, L, and the height of the gauge blocks, h, the opposite side of a right-angled triangle (Fig. 2.61).

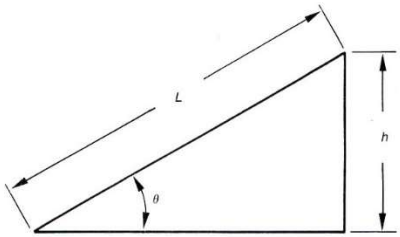


Fig. 2.61 *Principle of the sine bar*

The relationship between the opposite side and the hypotenuse is given by the trigonometrical ratio:

$$\text{sine of the angle} = \frac{\text{opposite side}}{\text{hypotenuse}}$$

$$\text{or } \sin\theta = \frac{h}{L}$$

$$\therefore h = L \sin\theta$$

Example

Calculate the height of gauge blocks required to set a 100 mm sine bar to an angle of 16°20′.

$$h = L \sin\theta$$
$$= 100 \times \sin 16°20'$$
$$= 100 \times 0.281\,22$$
$$= 28.122$$

∴ height of gauge blocks required is 28.122 mm.

Accuracy of sine bars

The sine bar is considered accurate for angles up to about 60° as after this the change in height for small increases in the given angle becomes too small to achieve accuracy. The figures given in Table 2.5 will illustrate the manner in which the difference in height decreases as the angle increases.

Table 2.5 Accuracy of sine bars

Given angle θ°	*h (mm)*	*h for increase of 1′*	*Difference in h (mm)*
10	17.365	17.393	0.028
20	34.202	34.229	0.027
30	50.000	50.025	0.025
45	70.711	70.731	0.020
60	86.603	86.617	0.014
80	98.481	98.486	0.005

IN THE WORKSHOP

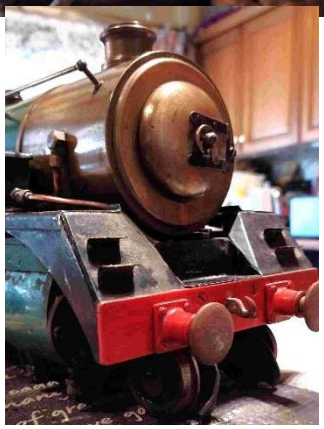
Tool Feature

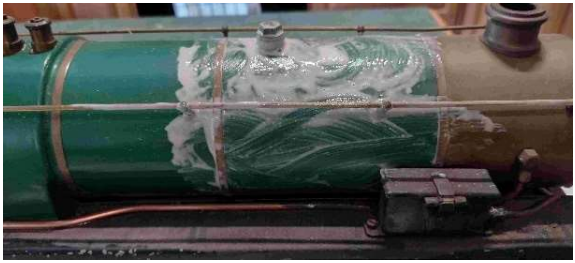
Over the last couple of years, a number of interesting tools have been featured. Tools, sometimes for a single job, or sometimes for a particular function. Most, but not all, are home made. So, if you have anything you have made or acquired to solve a particular problem, could you let me know and it will be featured for all members to see? Ed.

Little Green Locomotive

Avid readers of the Bulletin will recall the May 2022 edition in which a well made 2 ½" locomotive, retrieved from Graham Driscoll's shed, was shown. The provenance of this locomotive is still unknown.

However, Rachel Brougham has done a great job of cleaning and polishing the locomotive.





A lot of work to get all the grime of many years off and the underlying paintwork was found to be in good shape.

Geoff Hall assembled and painted the tender that was with the locomotive in bits. Together, the locomotive and tender make a fine display in the clubroom.

Boiler House Story

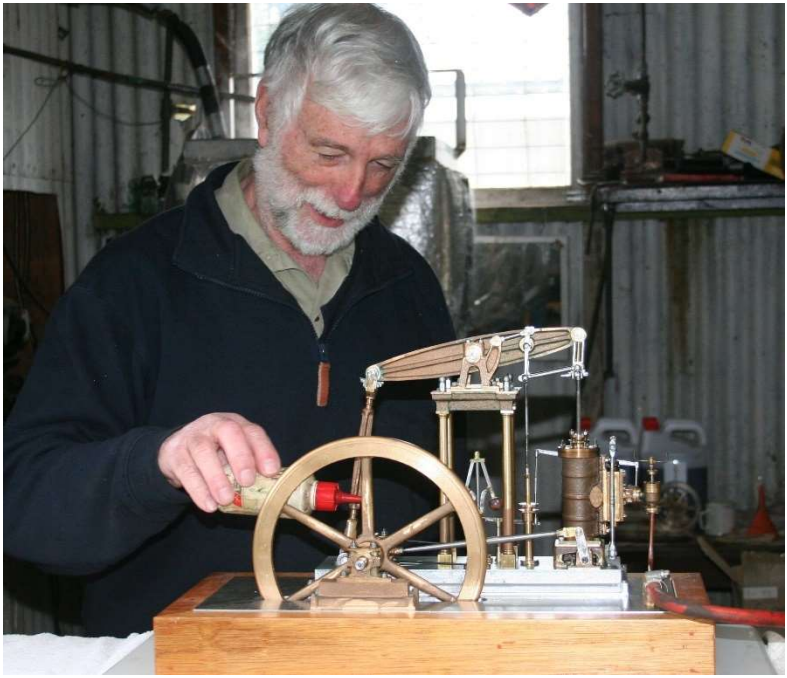
Bryan Homann

I had been considering how we might make the SASMEE boiler house more useful to members by setting a spot where members could test out their steam engines if they were still in the “not finished” boiler stage.

While cogitating this, an idea candidate turned up to test this out. It was Graham Gaetjens with his lovely fine scale beam engine. On the 4th of August field day. While it was a temporary connection to the 20psi steam system, it was Ok for a test. Unfortunately for Graham, this occasion, showed (as many of us have learned in the past), that an engine that is quite content to run on compressed air, baulked at steam.

However, this is part of the “joy” of model and experimental engineering. We in the boiler house will now be looking at how we can set up an available connection so that anyone wanting to test under steam can do so. Once we have determined the details, a specific connection size and type will be provided. This will be set up at the clubroom end window space, so it should be possible to even test a loco chassis, provided the owner sets it up so that wheels don’t cause it to take off. As the boiler is normally only steamed up for field days, that is when trials can occur.

Graham prepping his engine.



TECHNICAL MATTERS

Ballasting Basics

Taken from an article by Mike Payne in May 2024 Model Boats magazine. The full version is available in the library. Very topical at SASMEE at the moment! Ed.

In this article, we're going to be looking at ballast and where to put it, and the principles laid out here apply to all vessels, be they ARTR, kit or scratch built.

Ballast

What is ballast? Well, if we are to believe Archimedes, in practical terms it is the difference between the necessary weight/mass of your model

and the weight of the water it displaces when floating at its design waterline.

Hopefully, you will have already looked up Archimedes' findings on the web and know that if our model displaces 4kg of water it must itself weigh 4kg.

I define the model's necessary weight as the weight of the hull, superstructure, motors, control gear, electric string, and (normally) electric storage (battery), in other words, all of those items fundamental to an R/C model.

If we find this weight for our example is 3kg then, obviously, we are going to need 1 kg of ballast to get down to that critical waterline.

How many times have you seen the simple and entirely true statement "Just add ballast to get her to float on the design waterline"? There is rarely any guidance, though, as to where that ballast might be put, other than "as low as possible. " This really is of little help, given that ballast links stability, endurance, performance, appearance and inertia, not forgetting displacement, which takes us back to where we started.

Displacement

How, then, do you estimate a model boat's displacement? Luckily, for our purposes, you don't have to be very accurate (sorry, purists!) and the metric system is a great help. I found the following method in an article published aeons ago, and I know it works from practical experience.
You know the length (L) of the hull at the waterline in centimetres. You also know the width (W), again at the waterline, in centimetres. Thirdly, you know the depth from the waterline to the keel (D) in centimetres. This gives you a box L x W x D in cubic centimetres.
OK, your hull shape is not a box, but try to imagine how much of this imaginary box your hull would occupy. It gets better with practice but for the sake of this exercise say you estimate it will occupy about 65% of the box. The calculation, therefore, is L x W x D all times 0.65, which in this example fortuitously comes out at 4,000 cubic centimetres, or 4 litres. A litre of water weighs about one kilogram, therefore the estimated displacement is 4kg.
Note that if your model is a super tanker, or some other mammoth, the space it occupies within the box may be 80%, therefore the calculated displacement becomes 4.9kg. Alternatively, it may be a sleek greyhound of the seas, with a slender hull shape, only filling, say, 50% of the box, and therefore displacing 3.1 kg.

> "Now that we have linked ballast to displacement, what about stability, appearance, inertia, performance and endurance?"

This quick estimate might raise a red flag. In the super tanker example, you are going to have to lift this model of nearly 5kg every time you launch and recover. This may not be a problem here but if we were considering a much larger, therefore heavier, model — or if, like me, you are getting on a bit — it's worth thinking about before you start the build.
At the opposite end of the scale, the greyhound example reveals a more significant issue. If you recall from above, the model's necessary weight was 3kg and your estimated displacement is only 3.1 kg. Given the degree of approximation in your calculation, that's a bit close for comfort. You may need to consider lighter batteries, for example.
Now that we have linked ballast to displacement, what about stability, appearance, inertia, performance and endurance?
There was an excellent article by Glynn Guest in the September 1984 issue of Model Boats explaining the theoretical aspects of model ship

manoeuvrability (possibly available from archive) which I will try to precis. *(SASMEE Library has a copy of this article Ed.)*

Stability

A boat will rotate in pitch and roll about some point amidships. Clearly, much of your weight needs to be below this point so that the vessel tries to remain upright in roll, hence the mantra "as low as possible." The weight should also be distributed fore and aft of that point so that the hull is level in pitch.
Calculating the position of this magic point is possible but the most practical estimate is to look for that part of the hull which will carry most weight, that is, where it is largest or fattest below the waterline. This will be an initial guide.
Once the basic hull is built and waterproof put it into water and push it downward to the waterline with a single finger. Move the finger along the hull centreline until you can push and the hull stays level (in pitch). Now you know approximately where the point is.
Mark it somehow on the inside of the hull. This is the Centre of Gravity (CG).
If you can, use loose weights to float the hull down to its correct waterline and, very gently, again with a single finger, push the hull sideways. Move your finger along the hull until, when you push, the hull moves sideways without trying to turn at bow or stern. Mark this point also inside the hull. You will have found the centre of lateral area (CLA).

Appearance and Inertia

So, where to put this 1 kg of ballast we calculate we need for our model? Low down of course, but concentrated about the CG or distributed along the length? It depends really on what we intend to use the model for. The more the CLA is astern of the CG, the more reluctant the hull will be to turn away from a constant course.
If you want a highly manoeuvrable boat and have a choice, choose a hull where the CG and CLA are close together and keep the ballast concentrated about the CG. The model will be easy to turn but will demand your full attention while sailing.
Alternatively, if you enjoy a relaxed cruise, ideally chose a hull where the CG and CLA are separated and distribute the ballast along the length of the hull. This will increase inertia, which will resist change.
There is an additional advantage in distribution. A real vessel does not bob about like a cork giving its crew a rough ride; its vertical movement

through the water is gradual. Warships, for example, are designed to plough through the water, not rise with it, so that they remain as stable a gun platform as possible.
In other words, a model with its total weight distributed along the hull will look/ perform more like the real thing when it is out on the lake.

Performance and endurance

Most of us live some distance from our regular sailing water, therefore it's worth considering maximising the sailing time you can extract from any given model.
The amount of power you need to drive your model much faster than its scale speed is considerable and in my view wastes battery power better used to stay longer on the water. Try, therefore, to install as much battery capacity as you can within the overall displacement allowance and only use ballast to fine tune the model's overall presentation.

The photo above shows HMS Cossack, which was built from a Vic Smeed design but re-scaled to 1:96. Ballast was distributed inside along the keel, with particular attention to the bow and stern. She tends to ride very flat in pitch, even in quite choppy waters. A small amount was placed by experiment port and starboard just under the main deck amidships so that in a hard turn she rolls outward just like a full-size destroyer. Getting this feature to work reliably is not good for the nerves, but it impresses/alarms onlookers!
In hindsight, less weight but high within the masts perhaps might have been a better solution.
If you understand the principles and are prepared to experiment a bit, I believe the chances of success are very good indeed.

Engineering on the Paddle Steamer Marion.

Part 1 Bryan Homann

Due to a happy line of propitious events, I have been privileged to be able to assume the rank of volunteer Chief Engineer on the very historic PS Marion on many occasions. This story, which will start with a very brief pre-year 2003 history of the vessel will concentrate on the many engineering functions involved in operating this vessel. To avoid a

simple rendition of all the bits, I am going to tackle it in the form of preparing for, and going on a voyage (cruise). It will be predominately based around an interesting cruise I worked on where we sailed (steamed) from Mannum, to Wentworth, over around 13 days. However, not all the fun things happen every cruise, so I will divert to others now and then.

One of the family of Fowlers who developed and ran the Adelaide Milling Company (D&J Fowler Ltd), was George. George had developed an interest in the River Murray, as the family business also had interests in fruit. So, he had an interest in the river as a means of moving of produce upon it. He began an involved series of discussions with various contractors for plant and equipment for his steamer. All this eventually came to nought, as his poor health over several decades finally ended his life in October 1896. However, prior to that, much work had already been started at the yard of A H Lanseer at Milang, and hull materials were already on the way. Apart from timber, this also included galvanised steel work for the top section of the composite hull.

Discussions were had with the executors and his company, and it was decided that the most economical thing to do, was to finish the vessel as a barge. As an interesting aside, when it had been announced that the vessel, as a steamer, would be on the river in 1897, three captains wrote applying for the skipper's position. One of these was Captain Geoffrey R Wallace, who had apparently worked with Landseer for around 20 years. If that surname sounds familiar to SASMEE, it should be, as we occasionally see a model steam paddle ship on the pond built by his great grandson Allan.

On the 16th of February 1897, the barge now named Marion after one of the Fowlers, was hauled into the water.

There the barge floated, quite unloved until an event way upstream at Avoca happened on Christmas Eve 1899. A steamer, the Emily Jane, owned by William Bowring was totally consumed by fire. Bad luck for the Emily Jane, but a possible lifesaver for the unwanted Marion barge. Despite some wrangles with the insurer, the Marion was bought by Bowring for conversion into a steamer.

The barge was towed to Wentworth and became the property of Bowring in late March 1900. In August it was towed to Echuca for final fitting out, and on Saturday the 13th of October 1900, it left Echuca under steam with a full cargo! Amazing what could be done in colony's with virtually no manufacturing industry but without all the bureaucracy of today! Obviously a very dedicated and skilled workforce!

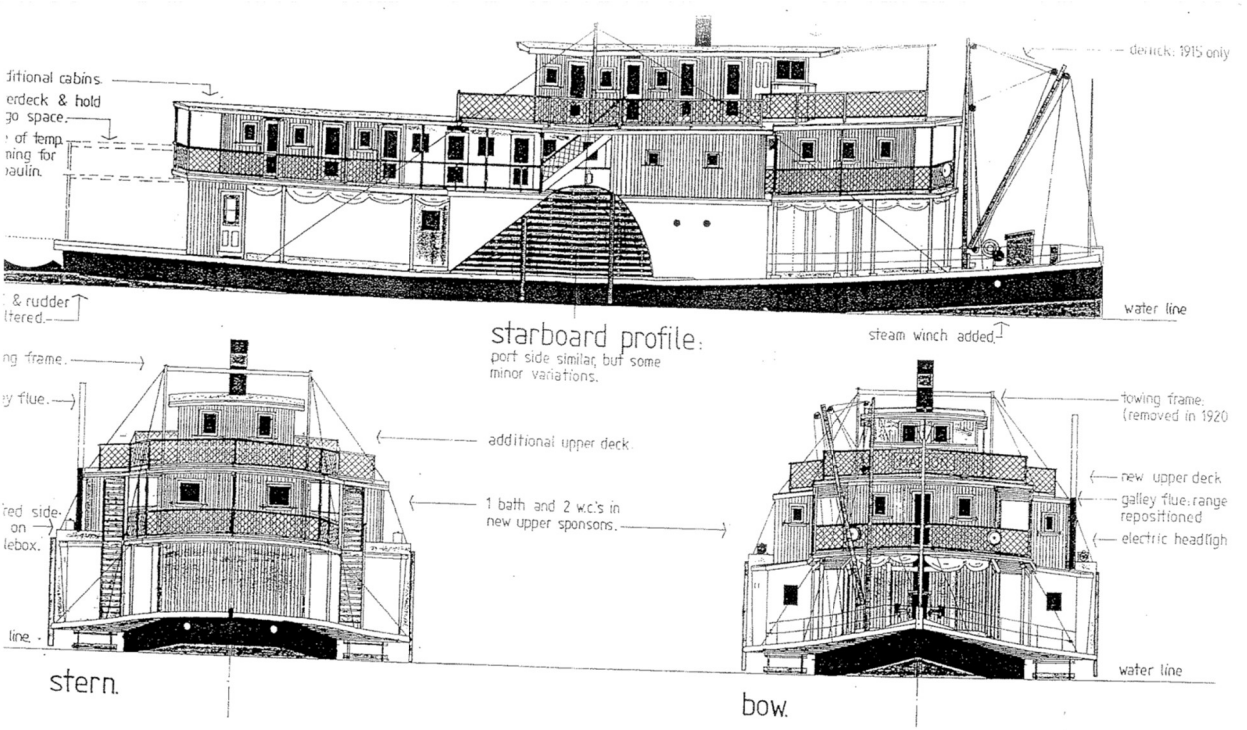


Plate 1 – PS Marion General Arrangement

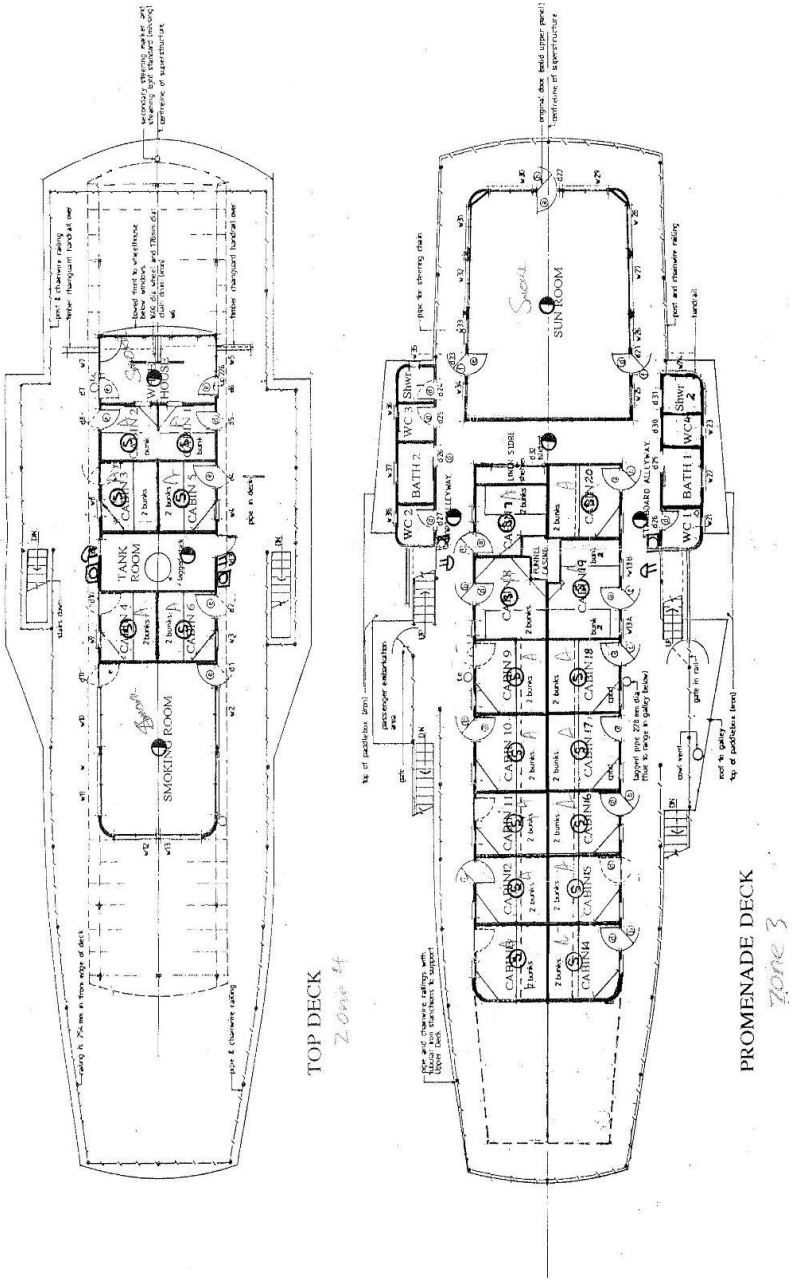


Plate 2 – PS Marion Internal Layout

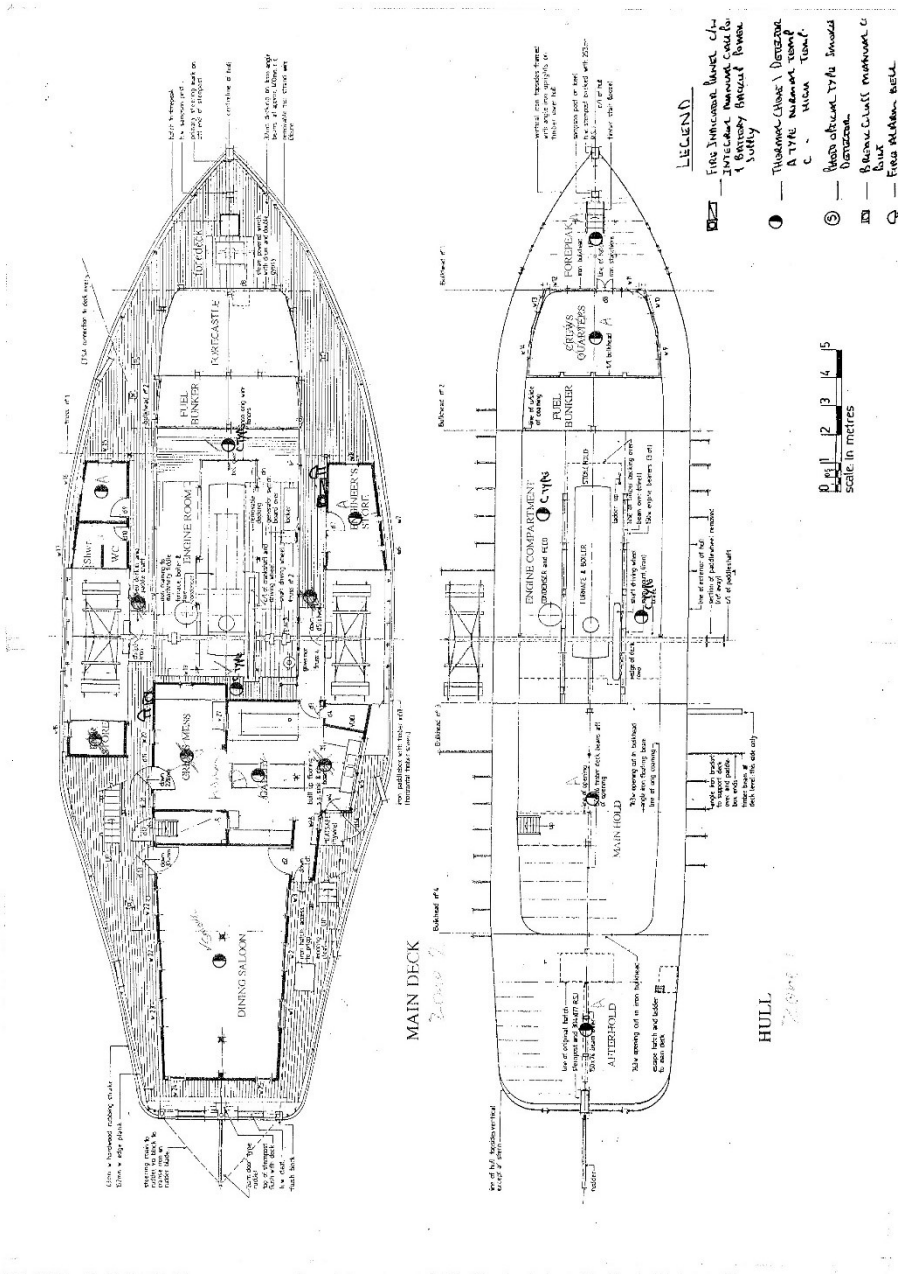


Plate 3 – PS Marion Internal Layout

After a long career, the Marion made its “last cruise from Berri to Mannum to go into the historic dry dock for static “preservation”. In 1985 a local process was started, that resulted in Marion being overhauled and put back into service as a heritage vessel.

On the 26th of November 1994 she was recommissioned. If you want to know more, talk to member Rob Ball; he was involved in the work. Now, forgetting all the things that Marion did, and all the changes to her looks that happened through the 20th century, finally we arrive where I got involved. Photo 1.

Photo 1 – Marion on the slip at Berri.

About nine years after her successful return to operational status, work had to be done on the engine; which involved an almost total strip down, with some parts sent to Melbourne, some to Murray Bridge, and some still on board, and a couple lost. The chap who had commenced the work had become unavailable, and as a result of a search for someone to put it back together, somehow my name got mentioned. Having just finished working on the rebuild of Pichi Richi’s locomotive NM25, I was at a loose end employment wise, so I took the job on. Doing the rebuild of the PS Marion’s engine is a story in itself, but less than 3 months after starting, I, with several very useful volunteers had her ready to go to the Goolwa for the 2003 wooden boats festival- almost a repetition of the 1994/5 events. It was so much fun working with these volunteers that I

stayed on as a volunteer, eventually qualifying for the position of Chief Engineer.
That title is shared with several other volunteers, and as we usually we only have one engineer on board, the title is a bit fanciful. Some skippers do occasionally refer to the “Chief”, and the position is in fact equal in rank to the First Mate, thus being direct in line to the skipper. What would happen if the skipper and mate were both disabled and we engineers had to assume temporary command could be quite “interesting”.
Finally, going to Wentworth 24/10/17 – 5/11/17.
The biggest manual task is the loading of fuel for the boiler. Logs of wood are not readily pumped on board, so a combination of a conveyor belt and several volunteers are needed. This is after other volunteers have laboriously chain sawed logs to a suitable length, and then split the really big ones.
Normally we can get to Morgan comfortably if the wood hold is filled to about a meter above main deck level, and two “wings” below deck in the stoke hold are also filled. Photo 2.

Photo 2 – The wood fuel supply in the stoke hold.

This, depending on who does the calculations, and what species of wood is available will be about 15-20 tons. Consumption is generally averaging about 1 ton every 3 hours of steaming at the breakneck velocity of 8-10 km/hr! If the river is actually flowing this is never achievable going uphill, or if it is, then the fuel bill skyrockets – just ask the fireman!
Assuming we are underway (a nautical term which means we are going along), the lucky fireman has to not only place the wood into the fiery furnace, but has to lug it out of the wood hold. This is not too bad when the hold is full to overflowing, but quite a job when the wood is 6 feet below the deck! Fortunately, we can call on the help of the deck hands if they are not otherwise engaged. We also have a couple of handy tools that help. Photo 3.

Photo 3 – wood handling tools.

Anyway, we are nowhere near ready to be “underway”. Apart from wood, we have to ensure there is adequate diesel on board to drive the diesel generator. This has a 354 Li tank on board, and consumes around 60-70 Li per day. This provides one of the engineer’s jobs – that of determining where we will have to get more fuel. We are not allowed to have it pumped on board (potential spillage into the river), so it all has to come in jerry cans. Apart from Mannum, we can usually manage to take this on at Morgan (via the Mid Murray Council who actually own the vessel), Loxton (where I have a PRR friend who can provide his trailer to get the cans up to the local Servo), Renmark, where the volunteers on the PS Industry will assist. After that, there is nothing from Renmark to Wentworth, so we need several jerry cans on board as well as the fuel tank.
Still not ready yet – we need to ensure that there is enough lubricant on board as the engine; like most steam engines, it is a total loss system. Photo 4.

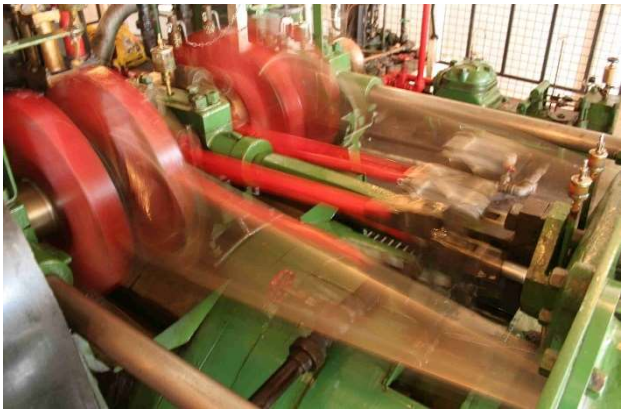


Photo 4 – Con rods and valve gear in full flight.

Then there are water treatment chemicals for the boiler, which need to be organised much in advance. Most of these jobs are done at least a week before the cruise to avoid last minute panics.
We have three basic water systems – one takes town water for the exclusive use of cooking in the galley, and making tea for the crew! That

has to be filled before we leave, and topped up, once again at places like Morgan and Renmark.
The next system takes water, via sea cocks from the river – for the rail types, we actually float in the tender water tank! This is distributed by a maze of copper pipes to the galley, and front lounge Bar for washing up, to the middle deck for toilets and showers. It also provides water to the boiler feed system as well. Tacked onto this is a set of electrically heated hot water tanks, and another maze of pipes.
The third system, nicely painted red, is for firefighting. That takes river water via a diesel-powered pump. To complicate matters, all of the latter two systems can also be powered by steam pumps in the engine room. And, before I forget, we can bolster the HWS with steam via a small heat exchanger as well. It takes a while to learn all the intricacies of these systems, as some have evolved over generations. Their locations have not been designed by some clever person with a 3D computer program!
It is always a good idea to check out the Engineers Store room. While it can be locked, an army of others seem to have the key, so tools sometimes go ashore, forgetting to come home. Also, because of the vessel vibration, a good stock of light globes is also very necessary. The failure rate is much reduced now though, with the availability of LED fittings. Handy things like cable ties, gaffer tape, pipe tape, spare batteries for assorted instruments, and etc always need to be on hand for patching things up.
Now feeling a bit hungry after all that work, we need to consider the galley, because without engineering, the Chef will have a hard time if he wants to dish up the lovely three hot meals a day that we all love so much. We have a normal type freezer, and, an almost walk in size, cool room. The cool room can work very hard in warm weather when the stove is going, so it is necessary to go down into the centre hold and make sure that the cooling unit is working properly. It has been known to lose a bit of gas, and twice during long cruises I have had to call in a refrigeration mechanic to find a very small leak, and re-gas the unit.
The vessel is blessed with a quite large two oven cooking range fuelled by coal. In days gone past it was Yallourn briquettes. After they became extinct it was West German briquettes, and currently, like the steam modelling fraternity, we are experimenting. While cooking is not quite like steam raising, it does require a fair bit of temperature to get, and keep the mass of cast iron and refractory brick good and hot. Most people have heard of the Aga cooking ranges. Well, ours is very similar, but is branded ESSE. Photo 5.

Photo 5 – ESSE Cooking range.

Naturally, this provides a suitable name, and it is simply known as Esse like it is just one of the girls. To prepare, it is necessary to ensure that the flue (2 1/2 decks high) is clean. This involves one slave going onto the top deck roof with a long rope. First, he has to wriggle the Chinaman's hat part of the flue off. At one end of the rope, is a large shackle, and in the middle is a flue brush, and at the other end just a bit of excess rope so that the lot doesn't get pulled down the flue. Most boat people quickly learn that when throwing any rope to secure their end onto something, even they just put a foot on it. The boss of the job is in the galley, with a vent removed to give access to the bottom of the flue. When the shackle arrives, he pulls the rope and brush down to the bottom of the flue, generally with a shower of soot as well. Upstairs, the slave retrieves the brush, and depending on the amount of soot each time the whole process is repeated. Once the flue is deemed clean, the slave pulls all the rope stuff up, carefully looping the rope into a bucket, and replacing the Chinaman's hat bit. Meanwhile the boss now has a goodly pile of soot in the bottom of the flue. Fortunately, the design of Esse has horizontal passages, through which ash and soot can be raked. A more detailed clean of Esse's innards is then advisable to make sure all other passages are clean, and that the grate is clean. Prior to current fuel/grate experiments, it was a good idea to make sure the grate was last put in right side up!

Adding to that, sufficient supplies of briquettes have to be stowed on board. Esse is a hungry beast and can chew up around 20kg of fuel per day.

As an aside, the slave on roof bit is absolutely essential should Marion be cruising past the bridges at Murray Bridge. The outer and inner top sections of the funnel, the whistle, Esse's Chinaman's hat bit, and the for'd flagpole all have to be taken down whilst underway, to avoid hitting the bridge. Several slaves are need for this business. It is the

responsibility of the Chief and the Skipper to make sure this happens. It is also important that the funnel cap be removed before lighting up the boiler!
And, while talking about things on the roof, on one trip when we were going under the historic lift bridge at Paringa, there was a loud splintering of timber as the flagpole suffered decapitation. Not our fault, as the bridge operator had failed to take the bridge right up, and it is very very hard to judge relative heights looking up – they all look scary! I must admit I was holding my breath waiting for an even bigger noise when the funnel crumpled, but fortunately that was Ok – phew!! As a result of that exercise, I took it upon myself to do a lot of measuring of the vessel while on the slip, so that I knew just what clearances we need. Strangely, no-one else seemed to have done that before – that I know of. That information can now be used against whatever information can be had about the river height to determine any actions, or to just ease the worry.
Now, back to the cruise. Pretty much everything has been done about a week out from departure.
Unless there is a locally available person with the knack of coaxing Esse to life, I need to be on board on the afternoon of the second day before departure. This is necessary because Esse, like a steam boiler takes time to warm up. Also, our favourite Chef likes to come on board around lunch time on the day before departure to commence some of his pre-cooking. Getting Esse started can be interesting! There is a bung hole in the middle of the main hot plate where fuel is put in. This is just on the Port side of the grate. From the grate, via assorted passages, the combustion products wander across to the Starboard side and to the flue. At initiation of the fire, the flue is cold and contributes nothing to getting the hot gases to go where they need to. Thus, it is a wise precaution to go and isolate that galley deck's zone on the fire panel-which is another gadget the Engineer has in his space. In really cold damp weather, it is useful to place a lighted rag, or screwed up paper at the bottom of the flue to encourage things. Starting the fire, is like most solid fires, a matter of starting small, and building on that. After half an hour or so, the hot gases have generally worked out where to go, and coal can be added to the burning wood. Esse can then be left alone for a while, with the addition of a bit more coal, with the dampers fully open. Around bedtime, the fuelling chute can be filled with coal, and the dampers closed right down. Esse will happily stay like that with a banked fire until next morning. At that time, the grate is given a really

good shake, more coal added, the ashpan cleaned, and by the time the Chef arrives the whole device will be nicely hot and ready for him. After that, engineering doesn't have much to do with Esse until the end of the cruise where ash has to be cleaned out. This is also a daily chore, but usually not needing engineering's involvement.
Now that Esse has been handed over to the Chef, finally, we can think about the other big hunk of metal that has to be warmed up – the boiler and the propulsion engine. Photo 6. This is basically a fairly large portable engine sans wheels. Built by Marshall and Sons at their Britannia Works, Gainsborough, England, it is the original special-order plant (No 34025) that went in back in 1900.

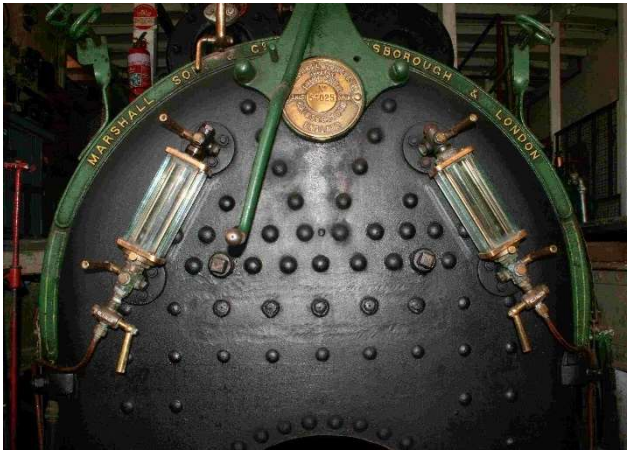


Photo 6 – The Boiler Backhead.

For anyone who wants to delve deeper, there is an interesting, presumably local paper, write up of the build of the vessel in Gwenda Painter's book PS Marion – Its life and times pages 23-24.
The backhead where it is fired from is for'd, which causes some confusion when talking to non-steam railway people, as it seems counter-intuitive to have the backhead at the front. This was not always so, as in its early years, it was the other way round, and the drive from the engine to the paddle shaft was by rope. That must have been gloriously quiet! At some time, the backhead went to the front, and a large cast iron wheel was fitted to the paddle shaft, with a smaller pinion wheel mounted on the crank shaft. About 11ft in diameter, that big gear was cast in Mannum. Photo 7.
However, because of the need to strengthen the gear teeth with rings at each end, it could not be machined. So, the gear teeth are not in perfect pitch all the way round. This is possibly also due to the most likely moulding process, where a quadrant of a pattern would be pivoted around a centre post in the mould (in the floor!), and the mould progressively built up.

Photo 7 – The big wheel in full flight.

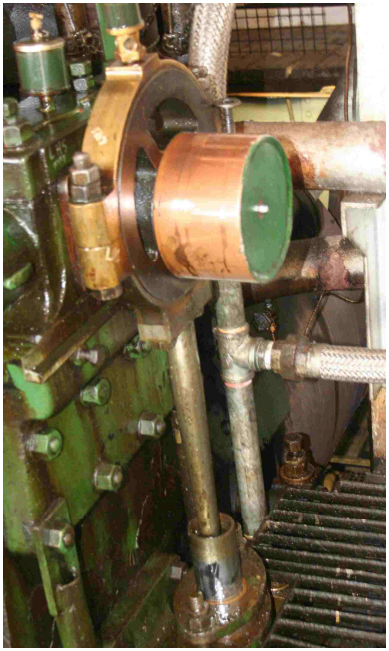
Any accumulative errors would culminate in an odd pitch. Thus, when going along we hear a sort of rumble rumble rumble kerththump rumble etc etc. On a quiet day, this Marion only rhythm can be heard coming for quite a distance. In the engine room it can be heard all the time! When the vessel was brought into heritage service, the big wheel was so badly worn that the volunteers took it off, turned it around so that "ahead" is now using the old "astern" side of the gear teeth. Now however, full astern when docking kicks up quite the racket.

Lighting up the boiler follows the time-honoured process of making sure there is water in the boiler, that valves are set as needed, gauge glasses checked etc etc.

While the boiler is warming up, the engine itself is oiled, and the assorted auxiliary machines are likewise lubricated. These consist of a Worthington type pump that can supply the boiler, but is mainly there for firefighting. Photo 8.

Photo 8 – Worthington Steam Fire Pump.

A smaller Mumford brand pump can also feed the boiler, and at a pinch can also pressurise the river water circuit should the 240V electric pump fail. I believe that this Mumford pump was used on the SAR 107-ton steam cranes. A small steam injector is also there to provide water into the boiler. Actually, mounted on the engine crankshaft is a "short stroke" pump that acts just like an axle pump, complete with bypass valve. Photo 9. In addition, for'd of the wood hold

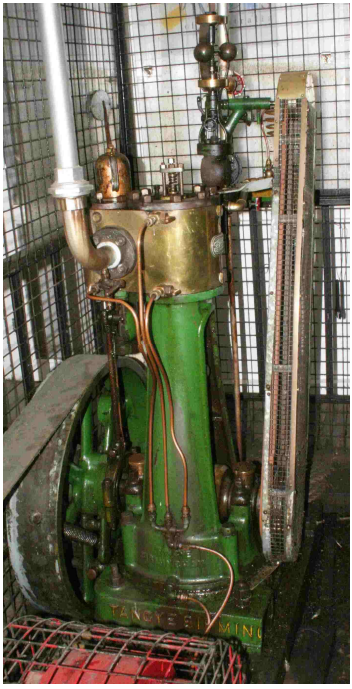


is a twin cylinder steam winch – about, more later. Previously used to drive the original electric lighting 110V DC generator, there is also a lovely vertical Tangye steam engine, complete with ball type governor.
This generator is now only for show, and the Tangye is sometimes operated to keep it oiled, and to show interested passengers. Photo 9.

Photo 9 – Short stroke water pump on the crankshaft.

Another job is to grease the steering gear. This is an interesting arrangement. Up in the wheel house is a very large spoked wheel, or helm. Photo 10.

Photo 11 - Tangye engine used to drive the DC generator.



It drives a winch drum around which a heavy chain is wound. On this chain there are small pieces of cloth (or maybe a paint mark). When the length of chain between the winch and the mark is equal on both sides, the rudder should be in mid position.

However! Because of the geometry at the rudder end, mid position has considerable slack in it. Photo 12.

Photo 12 – Steering gear. Rudder and chains.

Thus, (based on my meagre steering opportunities) it is necessary to gauge where the wind is coming from (a vector of real wind and forward velocity), and take up the slack so that you are holding it against the water and wind flow. You can't just let the rudder flap about, unless you want to be accused of zig-zagging to avoid torpedoes!

Anyway, the afore mentioned chains leave the wheel house over pulleys on each side, come down to the main deck slip around other pulleys (each side) and somewhere under tin covers along the deck, join onto long steel rods. At the stern, these rods become chains again and after going around more pulleys, end up fastened to the outer end of the rudder. On some other vessels, you will see that the aft chains actually go along circular guides to the rudder, thus largely eliminating this slack issue. In either case it is a far cry from the little stick (and presumably a lot of hidden electrics and hydraulics) seen in some modern craft.

Another check is to see that the bilge alarm float switches do their job in each hull section, and transmit a signal to the bilge alarm panel above the engine room workbench. This is a two-person job. One to poke around in the bottom of the hull with a hook to lift the float, and someone else at the panel to hear the squeal, and see that the red light for each zone comes on.

By now, we have left the day prior to departure, and have arrived at sailing day. The boiler has been warmed gently overnight, and about two hours before the advertised departure time, the fire can be relit, and brought into full steam (safety's at 115psi). The main steam valve will be gently opened to warm the pipes that take steam to the auxiliaries, and the steam bilge water ejectors. Generally, it is not necessary to drive the engine while moored, as sitting on top of the boiler, it is well warmed. If conditions demand a full steam ahead approach to departure, we would

turn the engine over slowly, in conjunction with the skipper. This engine is a twin cylinder simple engine with the valve chest in between the cylinders. It has Stephenson valve gear, and the whole crank shaft assembly is, while anchored to the cylinder block by large steel rods, is allowed to slide on its smokebox end mounts to allow for differential expansion between the engine and the boiler.
About 15 minutes before departure time, all the oilers will be turned on, the diesel generator started up, and the shore power cable disconnected from the shore power supply. It is embarrassing to find that when the word is given to move, the we are still moored with a 3-phase cable!

Departure time on the river is not a precise thing. Rather it might be seven-ISH

Based on the hope that it might actually be seven (as advertised), the fireman will have a good head of steam, a pile of wood on hand, ready to commit to the flame as soon as we are under way, and the engineer will be “standing by” waiting for the signal from above. Photo 13.

Photo 13 – engine Controls – Regulator and Reverser (top right)

This is where – “ish” can be a nuisance. The Marion does not have a blower (like a loco) but a leaky damper, and a very long funnel. Even with the damper fully closed, the draft up the funnel will make steam. While waiting for – “ish” to become a go signal, two sets of nervous eyes are watching the pressure gauge as it slowly approaches 115. If we are lucky the signal will arrive just before the safety valves are starting to feather. If not, on goes the injector.

Apologies for leaving you in mid-air like this! This article will be continued in the next Bulletin. Ed.

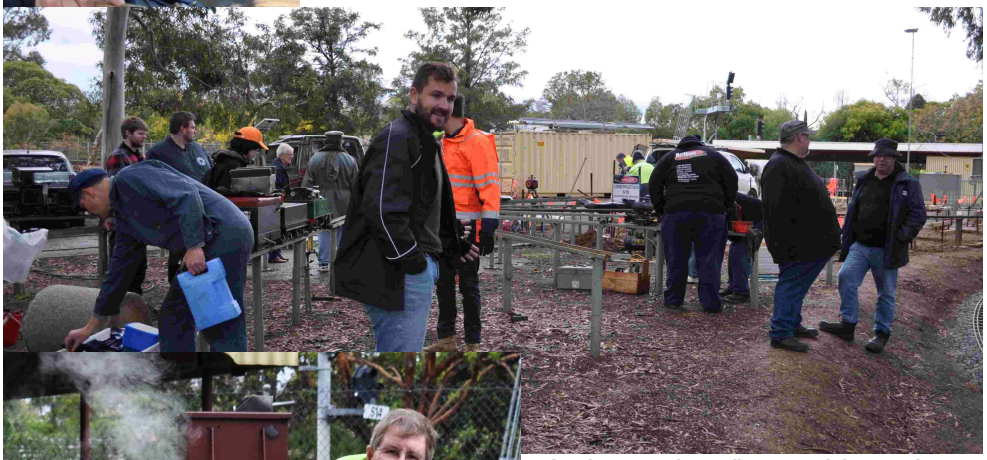
CLUB ACTIVITIES

Safety Valve Run

The Safety Valve Run was held on Saturday 29th June. As the Interclub Invitation had been cancelled in March due to hot weather (after being shifted from January to avoid the hot weather!) kindred clubs were invited to attend this event.

The weather early was miserable, but cleared up as the day went on. As it was winter the event started at 1000 hrs with lunch at 1230 hrs.

In spite of the weather, or perhaps because of it, we had quite a number of members from other clubs, and so many opportunities to catch up with like-minded people occurred.



Action at the 5” turntable and on the track.

Buy and Sell

This has now been shifted to the SASMEE Website. Under the ABOUT SASMEE Tab. No password required.

If you have anything in the workshop and model engineering area that you would like to buy or sell, please let me know.

Keep monitoring this site. There is a lot of good stuff.

Up and Running

Since the last Bulletin, Public Run Days were held on the 18th May, 2nd June, 15th June, 7th July and 20th July, 4th August and 17th August. There was the Safety Valve Run on Saturday 29th June.

Here are some selected details.

The Run Day on the 15th June had the following activities:

5", 7 ¼"

- 705 Guard — Ashley Roocroft/Fiona Cockburn
- Sooty Guard — Rohan Garrard/Cameron Dicker
- Jens — Richard Sanders

On the 3 ½", 5" track were:

- NSU 57 — Kingsley Martin
- Apprentice — Jake Bott
- 900 — Bob Smith
- Smiley — Daniel O'Neill

On the pond were:

- Pride of Firth — Bob Smith
- Airboat Skimmer — John Foster
- Pilot Boat — Michael Offler
- Yacht Safir — Alan Saunders
- Swiss Barge, Cabin Cruiser — Malcolm Ambler*
- Tug Bison — Michael Priest

On the Garden Railway

- The Garden Railway did not operate.

On the stations were Rachel Brougham, James Rault, Toni Offler, Dianne Sanders and Archie Aworth.

Bryan Homann and Michael Moyse attended the Steam House.

In the Canteen were Mary Homann, Di Watkin and Graham Gaetjens.

On the gate was David Hawkins.

Max Shuard was the Safety Officer.

The Run Day on 7th July had the following contributions:

5" 7 ¼"

- Sooty/De Winton — Rohan Garrard/Cameron Dicker — Guard Matthew Longman.
- 705 — Ashely Roocroft Guard — Daniel O'Neill. — and Henry

On the 3 ½" 5" track were:

- 509 — John Mere
- 457 — Simon Lindsay
- Smiley — Richard Sanders
- Heisler — Alan Thomas
- Apprentice — Grant Campbell
- T Class — Peter Homann

Some of the boats on the pond were:

- Skylight, Foxy Lady — Michael Offler
- Pride of Firth — Bob Smith

- Yacht Safir — Alan Saunders
- Wally Workboat — John Clayfield
- Skimmer 1 — John Foster

On the Garden Railway

- Egrid — Max Shuard
- Thomas and Friends — Archie Aworth

On the stations were James Rault, David Bryker, Toni Offler, Scott Aworth.

In the Canteen were Mary Homann, Di Watkin Bryan Homann and Enzo Greco.

On the gate was David Hawkins and Trevor Morcom.

Safety Officer was Ainsley Cuthbertson.

The Run Day on the 17th August had the following activities:

5", 7 ¼"

- Sooty — Cameron Dicker/Guard Xavier O'Loughlin.
- X33 — Ashley Roocroft/Jackson Hefford.

On the 3 ½", 5" track were:

- 457 — Simon Lindsay
- Smiley — Daniel O'Neill
- Apprentice — Ainsley Cuthbertson
- Heisler — Alan Thomas

On the pond were:

- Tug Boat — Mike Turner
- LK57 — Michael Offler

- Coral Island — Michael Priest
- MTB — Enzo Greco
- Grenadier — Alan Saunders
- Excellent — Fiona Cockburn
- Mila — Di Cockburn

On the Garden Railway

- K27 Class #453, Mogul #22, C19 Class #40 — Alex Dyson-Smith

On the stations were Toni Offler, Kingsley Martin, Paul Hefford and Scott Aworth.

Michael Moyse and Bryan Homann attended the Steam House.

In the Canteen were Mary Homann, Di Watkin and Graham Gaetjens.

On the gate was David Hawkins, Trevor Morcom and Fiona Cockburn.

Ian Thomas was the Safety Officer.

Meetings

All meetings were held in the club rooms on the second Tuesday of the month. All meeting were held in the Clubrooms.

Efforts are being made to provide interesting and topical talks after each General Meeting. If you have any ideas, requests (or better still!) offers. Please let me know. Ed.

SASMEE PROJECTS

Signalling Works.

Work is continuing on the signal masts and footings. The main work is now setting up the control panel in Fort Knox. This has been complicated by the construction of the new workshop. Some temporary works will be required during the construction period.

Workshop

On the 29th May there was a "Turning of the Sod" ceremony, presided over by local MP Jayne Stinson and her three-month-old son Quinn.

This marked the official start of the project.

While there, Quinn was presented with his first train set.

With the onset of winter, completing the earthworks and placing the concrete took some time. Pouring the footings commenced on Monday 1st July and the final concrete for the floor was completed on Wednesday 24th July.

Here are some selected pictures of the progress.

Construction Site Notices

Commencement of Earthworks. About 75 t of unsatisfactory sub base had to be removed and replaced by 65 t of quarry rubble.

Drilling pier footing. These extend over a metre and vary from 600mm to 750mm in diameter.

Preparing formwork.

Pouring concrete. 26t of concrete was used.

The finished slab

Trackwork

The track from the 5” turntable to the mainline has been re-routed to allow for the construction of the new workshop. Some stub tracks will need to be removed to allow for the access ramp.

SASMEE BUSINESS

Vale Malcolm Ambler

Malcolm was born on 8 January 1930. He outlived many famous people who share his birth date – Elvis Presley, Shirley Bassey and David Bowie, to name a few.

Malcolm grew up at 52 Galway Avenue, Broadview, the property which Philip and Julie live in and at which their children grew up. He went to school at Nailsworth Primary and Nailsworth Tech. He wanted to become a mechanic, but his parents disapproved, so his first job was in the warehouse at G & R Wills. From there he moved to Scrymgour and Son Stationers and Printers as a salesman, eventually taking the role as Stationery Manager.

When on family holidays, the waitress, or receptionist would often say “Mr. Ambler, is that you?”, as Malcolm had called on them as a salesman when they had worked for one of his clients. In those days the salesmen visited the premises of each client and took and delivered orders for them personally.

Malcolm and Dorothy met at the Palais. That is the original Palais on North Terrace opposite the old RAH, which is now a carpark, not the current Semaphore Palais. Malcolm needed a date for the G & R Wills ball, asked Dorothy to dance with him, invited her to partner him at the ball and took her to her parents’ home

They were married on 24 September 1955 in St Cuthbert’s Church Prospect and then moved to their address in Marie Road, where they lived in for their entire lives. They did demolish the old home and rebuild in 2007.

Malcolm’s passion was building model trains and boats. He was a member of the South Australian Society of Model and Experimental Engineers (SASMEE) for as long as we can remember, joining the society in 1966.

Malcolm driving his locomotive, with his granddaughter Joanne and great grandson Riley as passengers.

The Society and the friends he had there were a very important part of his life.

Malcolm also bred canaries and bantam hens. In those days, it was permissible to have a rooster in the backyard and it seemed that Malcolm constantly had broody hens hatching chickens. Malcolm's canaries bred like rabbits and he would sell of the youngsters.

Malcolm also liked to ride his bike around the Manningham area. He was a real eagle eye, picking up bolts and nuts etc. up from the road when he saw these as he was riding.

Malcolm was always a snappy dresser in collar, tie and jacket. We see this similarity in his grandson Matthew, who is also a very snappy dresser. When Matthew was in Year 8, it was grandparents' day at Concordia College. The students were attired in their formal blazers, trousers, dress shirt and ties.

Malcolm was also wearing blazer, trousers, dress shirt and a tie. We have a photo from that day of Malcolm and Matthew standing together with the identical stance, in virtually identical outfits

Malcolm was primarily a family man, with a large extended family. Husband of Dorothy. Father of Julie, Philip, Nigel

and Sue. Grandfather of Matthew, Gabrielle, Joanne, Chris and Dylan. And Great Grandfather to Riley and Isabeau.

A true gentleman– kind, patient and considerate and a loyal friend of many.

Here are some of Malcolm's models.

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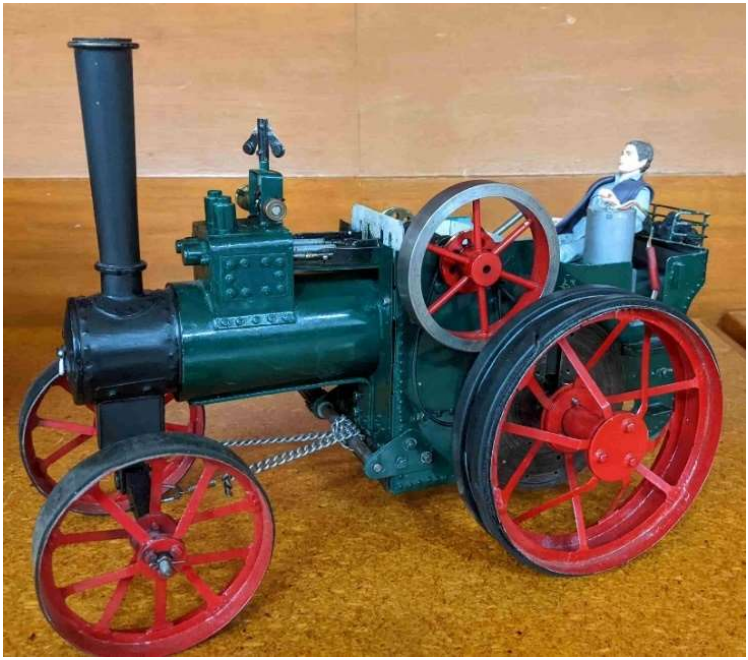

New Members

Since the last Bulletin SASMEE has gained these new members:

Jarrett Mattner	May 2024
Robin Baker	June 2024
Scarlette Eovlev	July 2024
Hailey Gibbs	August 2024

REMINDERS!!

Food Safety Course

There is a very good food safety training course online at:

https://dofoodsafely.health.vic.gov.au/index.php/en/

Anyone involved with the Canteen is encouraged to undertake this course. It covers the basics and gives good advice on food handling for public areas.

Working with Children

And for those who still haven't undertaken their "Working with Children" clearances, these are still necessary, so please get on the case.

You will soon receive some explanatory notes on this issue. It is vital SASMEE has up to date information.

Sign In Requirements

It is a requirement to sign the attendance book whenever you are on site at SASMEE. This is an important requirement of the SASMEE insurance and failing to sign in may mean you are not covered in the event of an incident or accident.

Note that you are now asked to enter the time of arrival and the time of leaving.

So please remember to sign in whenever you are at the park, even if there for only a short time.

ELECTED MEMBERS 2024/2025

Below are listed the elected members.

President	Ian Thomas
Vice President	Bryan Homann
Secretary	Alan Thomas
Treasurer	Mary Homann
Asst Treasurer	Richard Sanders
Safety Co-ordinator	Rachel Brougham
Councillors	Jake Bott
	Rohan Garrard
	John Mere
	Ashley Roocroft